

# The College of Optometrists

## Welcome to our webinar



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# Orthoptics for the busy optometrist

1 Interactive CET point


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 22 January 2020




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## How to ask questions


iPhone




Android



Desktop





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## Interactive CET point

- Answer min four poll questions
- Remain in webinar for at least 50 mins
- Complete feedback form

Submit poll

On what proportion of patients do you carry out OCT scans?



- Less than 25%
- 25-50%
- 50-75%
- More than 75%
- Not applicable



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## DISCLOSURE

- Paid lectures & KOL/product feedback programmes:
  - Alcon, American Academy of Optometry (UK), Association of Optometrists, Birmingham Focus on Blindness, Black & Lizza, Central (LCC) Fund, Centur Visual Technologies, College of Optometrists, Coopervision, ESRC, General Optical Council, Hoya, Institute of Optometry, International Institute for Colorimetry, Iris Fund for Prevention of Blindness, Johnson & Johnson, Leightons, London Vision Clinic, MRC, Norville, Optos, Paul Hamlyn Trust, Perceptiv, Scrivens, Specsavers, Thomas Pocklington Trust.
  - Lecture content always my own
- Author of Pickwell's Binocular Vision Anomalies, editions 3-5
- i.O.O. Sales Ltd markets IFS orthoptic exercises, which the speaker designed, and for which he receives a small royalty
- Director of a community optometric practice in Brentwood, Essex

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## PLAN

For regular tweets on optometric research:  


- INTRODUCTION
- INVESTIGATION OF INCOMITANCY
- INVESTIGATION OF HETEROPHORIA
- INVESTIGATION OF HETEROTROPIA
- TREATMENT
- CONCLUSIONS

Full handout of slides from [www.bruce-evans.co.uk](http://www.bruce-evans.co.uk)

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## OVERVIEW: CAVEAT

- >5% of patients seeing community optometrists have BV problems
- Always look for pathology:
  - Neuro-optometric checks
    - Pupils, discs, fields, strabismus, incomitancy, accommodation
  - Check these things regularly
- Don't forget refraction
- Change management if not improving significantly
- Refer if still not improving
- Appropriate re-exam intervals (frequent)

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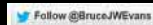
## Poll question 1



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## PLAN

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INTRODUCTION

INVESTIGATION OF INCOMITANCY

INVESTIGATION OF HETEROPHORIA

INVESTIGATION OF HETEROTROPIA

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## CAUSES OF INCOMITANCIES

- | VASCULAR                    | NEUROLOGICAL               | OTHER                   |
|-----------------------------|----------------------------|-------------------------|
| • <u>Diabetes</u>           | • <u>Tumours</u>           | • <u>Trauma</u>         |
| • <u>Hypertension</u>       | • Multiple sclerosis       | • <u>Thyrotoxicosis</u> |
| • <u>Stroke</u>             | • <u>Myasthenia gravis</u> | • <u>Toxic</u>          |
| • <u>Aneurysms</u>          | • <u>Migraine</u>          | • <u>Iatrogenic</u>     |
| • <u>Temporal arteritis</u> |                            | • <u>Idiopathic</u>     |

Underlined = more likely in elderly

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## Poll question 2



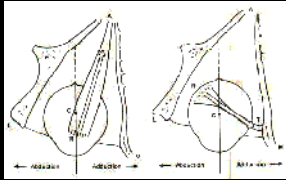
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## Motility test

- Use reliable pen torch
  - Check nose not occluding
- Really, three tests, so do three times:
  - 1) Observe corneal reflexes
  - 2) Cover test in peripheral gaze
  - 3) Ask about diplopia
- Beware of reports of diplopia
  - May break down (in view of target, distance, fus. res.)
  - May be variable
  - May be confused
- Know the muscle actions (RADSIN)

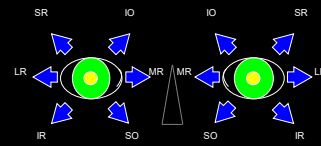
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## ACTIONS OF SUPERIOR MUSCLES



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## MOTILITY DIAGRAM



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## Incomitancies: the bottom line

- Some incomitancies are difficult to detect
  - If symptoms are suspicious, do cover testing in peripheral gaze
  - Testing for cyclo-deviations detects SO palsies
- Refer new or changing incomitancies
- In some long-standing cases, prescribing the prism required in the primary position may help

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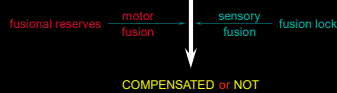
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## DISSOCIATED HETEROPHORIA



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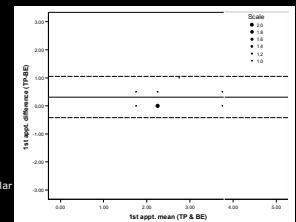
## Signs of decompensated phoria

- Symptoms
- Poor cover test recovery

Grade	Description
1	rapid and smooth
2	slightly slow/jerky
3	definitely slow/jerky but not breaking down
4	slow jerky and breaks down with repeat covering, or only recovers after a blink
5	breaks down readily after 1-3 covers

- Some information can be obtained from recovery movement, but
- No data on sensitivity & specificity of this
- Cover test dynamics are complex (Barnard & Thomson, 1995)


Evans (2007) Pickwell's Binocular Vision Anomalies  
Panesar & Evans, in preparation



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### KEY SIGNS OF DECOMP. PHORIA

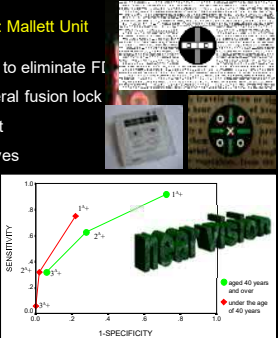
- Symptoms
- Poor cover test recovery
- **Aligning prism (FD test)**
- Low fusional reserve opposing phoria
  - Sheard's criterion
  - Particularly useful for exophorias
- For esophorias, size and imbalanced fusional reserves are relevant
- For hyperphorias, size matters



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### ALIGNING PRISM: Mallett Unit

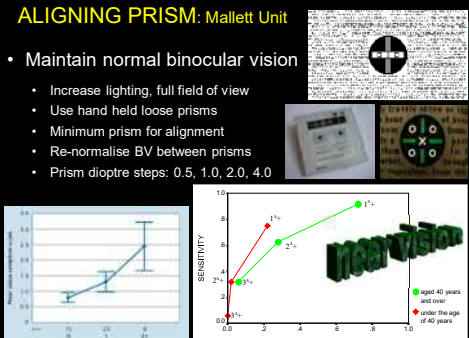
- aligning prisms/spheres to eliminate FI
- good foveal and peripheral fusion lock
- question set is important
  - ask if a line ever moves
  - Karania & Evans (2006)
- for symptomatic phoria:
  - sensitivity 75%
  - specificity 78%
  - Jenkins, Pickwell, & Yekta (1989)



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### ALIGNING PRISM: Mallett Unit

- Maintain normal binocular vision
  - Increase lighting, full field of view
  - Use hand held loose prisms
  - Minimum prism for alignment
  - Re-normalise BV between prisms
  - Prism dioptre steps: 0.5, 1.0, 2.0, 4.0



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# Poll question 3



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### KEY SIGNS OF DECOMP. PHORIA

- Poor cover test recovery
- Aligning prism
- Low fusional reserve opposing phoria
  - Sheard's criterion
  - Particularly useful for exophorias
- For esophorias, size and imbalanced fusional reserves are relevant, consider cycloplegia
- For hyperphorias, check comitancy carefully



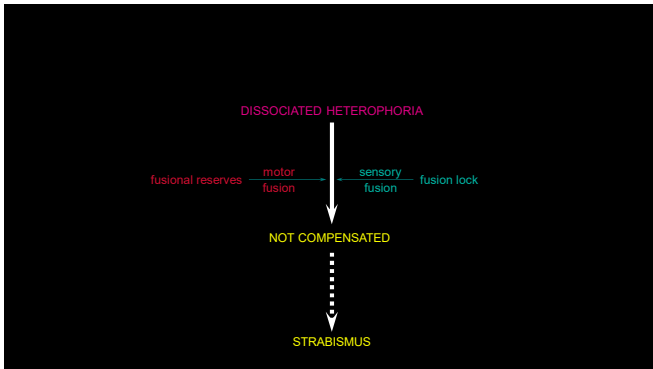
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### STEREOTESTS

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### Strabismus: the bottom line for the busy optometrist

is it new or changing?

A  
M  
B  
L  
Y  
O  
P  
I  
A

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### Strabismus: the bottom line for the busy optometrist

```

    graph TD
      Q1[is it new or changing?] -- yes --> Q2[do I know the cause?]
      Q1 -- no --> Q3[any treatment needed? probably not]
      Q2 -- yes --> Q4[can I correct it?]
      Q2 -- no --> R1[REFER]
      Q3 --> R2[REFER]
      Q4 -- yes --> R3[e.g., Rx]
      Q4 -- no --> R4[REFER]
      R3 --> R5[sorted!]
  
```

A  
M  
B  
L  
Y  
O  
P  
I  
A

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## Poll question 4

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## PLAN

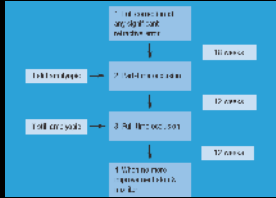
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## TREATMENT OF AMBLYOPIA (a)

- Flow chart based on review of recent RCTs in Evans et al. (2011; OPO)
- Many cases of amblyopia can be cured by refractive correction alone;
  - 20% don't need occlusion (Gibson, 1955; Pickwell, 1984; Stewart et al., 2004; West & Williams, 2011)
  - Contact lenses are likely to be best in anisometropia (Evans, 2006)
- Many cases never require full-time occlusion
  - if 6/9 to 6/25, 2h occ. = 6h
  - if  $\leq 6/30$ , 6h > 2h
- Avoid full time occlusion for orthotropic anisometropia
- Timings approximate
  - See patients frequently during the treatment of amblyopia, to begin with every 4-6 weeks



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## Poll question 5



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## MOTOR DEVIATION: REFRACTIVE CORRECTION: OVERVIEW

- Mandatory in accommodative esotropia
- Also possible to treat convergence excess with multifocals & exo-deviations with negative lenses
- limited by 4 factors
  - angle of deviation
  - refractive error
  - accommodation
  - AC/A ratio



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## MOTOR DEVIATION: REFRACTIVE CORRECTION: SPECIFICS

- determine sphere that
  - eliminates strabismus (no diplopia)
  - eliminates FD on Mallett Unit
- prescribe, try to reduce approx. every 3-6/12
- negative adds (Chen et al., 2016) and bifocals/varifocals can work well



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## MOTOR DEVIATION: REFRACTIVE CORRECTION: CASE STUDY: D1542

- 11/5/96, female, age 8y, 1 headache a fortnight
  - wearing full cyclo plus (c. +2.00, R=L)
  - cover test: D: 8Δ SOP N: 10Δ RSOT
  - with +2.00 add: N 4Δ RSOT with +2.50 add: N ortho

Date	May 96	July 96	Mar 97	Jun 97	Sep 97	Jan 98	Apr 98	Jan 98	Sep 98
Add	+2.50	+3.00	+2.50	+2.00	+1.75	+1.50	+1.00	+0.50	None

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## MOTOR DEVIATION: PRISMATIC CORRECTION: OVERVIEW

- preferred treatment in small/moderate vertical deviations
- may also help in small/moderate horizontal deviations if not amenable to refractive modification or exercises
- limited by angle of deviation / cosmesis of prism

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## MOTOR DEVIATION: PRISMATIC CORRECTION: SPECIFICS

- determine prism that
  - eliminates strabismus (no diplopia)
  - eliminates FD on Mallett Unit



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## MOTOR DEVIATION: FUSIONAL RESERVE EXERCISES: OVERVIEW

- preferred treatment in small/moderate horizontal deviations, if px co-operative
  - Work well in those aged 11-19y, even if strabismic (Pickwell & Jenkins, 1982)
- in exo-deviations improve ability to converge
- in eso-deviations improve ability to diverge
- try to assess progress using a method different to the treatment technique
- mixed evidence from RCTs
  - Scheiman & Gwiazda (2011) - intensive exercises better than push-up
  - CITT-ART trial – intensive exercises improve NPC & fusional reserves, but not symptoms (CISS) or reading

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## CONVERGENCE INSUFFICIENCY: SPECIFICS

- Treatments (in order of increasing complexity)
  - simple push up (bead on string if very remote)
  - jump convergence
  - push up with physiological diplopia
  - jump convergence with physiological diplopia
  - programme of exercises (e.g., Institute Free-space Stereograms)
- RCT shows intensive programme of exercises better than home push-up
  - results may be attributable to dose effect
- "Whether synoptophore or jump vergence stereocards are used...the critical variable is the length of time it is maintained" Vaegan (1979)
- "Convergence exercises independent of accommodation were the most effective treatment" Horwood & Toor (2014)
- See standard textbooks for details on exercises (e.g., Pickwell's Binocular Vision Anomalies)



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## Poll question 6



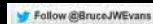
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## PLAN

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## CONCLUSIONS

- Always be on the lookout for pathology
  - refer if no significant improvement
  - BUT pathology is very rare
- It is possible to treat amblyopia in optometric practice
  - patients will need good instructions & regular checks
- Many comitant ocular motor anomalies are treatable
  - plus for eso, minus for exo, & prisms are under-used treatments
- Vision therapy for convergence insufficiency is evidence-based, but there is a need for more research for other forms of vision therapy



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## Q&A



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## Thank you

Thank you to everyone who attended, and all those who submitted a question this evening.

A recording of this webinar and the follow-up podcast will be available on the College's website soon.



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## FEEDBACK AND CET

### FEEDBACK

Your feedback helps us plan future member events. Let us know what you thought about this session at [www.college-optometrists.org/BruceEvans-Feedback](https://www.college-optometrists.org/BruceEvans-Feedback)

### NEXT WEBINAR

How to recognise diabetic retinopathy and manage your patients – 19 March 2020  
<https://www.college-optometrists.org/Webinar-DiabeticRetinopathy>

An email containing these links will be sent to you within the next hour.



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